



# DISCIPLINE: Physical & Environmental Protection

## Discipline Roadmap for: HVAC (Heating, Ventilating, and Air Conditioning)

DOMAIN: SECURITY

Current		2 Years		5 Years	
Baseline Environment		Tactical Deployment		Strategic Direction	
Liebert				Market Watch (green refrigerants and waterless refrigerants)	
Most data center purposed equipment for room, zone and rack level systems, supported by 24x7x365 support, are acceptable.				Shared	Agency 
Retirement Targets		Mainstream Platforms (must be supported)			
N/A		Liebert			
Containment Targets			Emerging Platforms		
N/A			Market Watch		
Implications and Dependencies					
<ul style="list-style-type: none"><li>▪ Acquisition costs can be significant.</li><li>▪ External assessment recommended to determine capacity requirements. (Reference State Engineer’s Office existing contract)</li></ul>					
Roadmap Notes					
<ul style="list-style-type: none"><li>▪ Network-based power management systems must be secured with at least SNMPv3.</li></ul>					

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### ■ Discipline Boundaries:

- ❑ HVAC specific to data center applications, may include rooftop units and distributed units that provide localized air cooling, or under-floor systems used in conjunction with raised floor areas.

### ■ Discipline Standards:

- ❑ ANSI 135 - BACnet Data Communication for Building Automation and Control Networks.
- ❑ "Telecommunications Infrastructure Standard for Data Centers," TIA-942

### ■ Migration Considerations:

- ❑ Should be an integrated system that optimizes electrical power, space allocation and mechanical systems.
- ❑ Strive for redundancy in the HVAC system by installing multiple units; focus on rack and tile placement to maximize the efficient flow of chilled air; use spot cooling as needed.

### ■ Exception Considerations:

- ❑ Specialized business needs requiring exception should be reviewed through the AOC exception process.

### ■ Miscellaneous Notes:

- ❑ HVAC should be integrated with a humidity control system.
- ❑ Design guidelines:
  - Ambient temperature should be between 70° and 72° F, with a relative humidity of 45% to 50%.
  - Redundant (distributed units) systems are better than centralized systems.
  - Design airflow to move from bottom to top and from front to back through racks to avoid consumption of used air.
  - Alternate cold-aisle and hot-aisle (intakes facing each other, exhaust facing each other) for temperature control efficiencies.
  - Establish a vapor barrier throughout the perimeter of the data center to minimize condensation.
  - Use spot cooling or special rack enclosures for hot spots in the data center layout.

### ■ Established

- ❑ November 15, 2006

### ■ Date Last Updated:

- ❑ November 15, 2006

### ■ Next Review Date:

- ❑ November 2007